Bubble Ride

A postmortem and my transition
from an artist to a game designer.

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Master of Arts Thesis 2016 | Media Lab
Aalto University School of Arts, Design and Architecture

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Abstract

This thesis project is a reflection of my first game as a game designer, which was entitled Bubble Ride. The game was developed during my time at a company called Xacti Oy, and the team developing this project consisted of 6 persons (myself included). The game was developed for young adults and children, and was designed as a casual game.

In this thesis, I will compare the role of game designer to that of a game artist, and discuss how the workflow of game art is different than game design. I was responsible to define the basic gameplay mechanics; game elements, game art and UI design.
Below is the Download link:
https://itunes.apple.com/us/app/bubble-ride/id662029890?mt=8

Keywords Game Design, Game Production, Game Art, Postmortem, Finnish Game Development

Acknowledgements

I would like to take a moment to thank the team at Xacti for making this possible, as well as the cool kids who took part in the game testing sessions. I'm also grateful to Teemu Kivikangas, Minna Eloranta, and Janne Piekkola for providing useful information during the interviews. Ava Grayson and Teemu Vilén, thank you guys for making it possible. Miikka Junnila, a big thank you for looking out for me and advising me in the process of writing this paper.

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1. Introduction

I joined Xacti Oy (a game company startup) as a game artist and game designer. During my time there, we worked on one iPad game project. I subsequently chose this project for my thesis because it was the first game I had done as a qualified game designer. I am eager to make the post-mortem, reflect on my learning experiences, and outline my transition from game artist to game designer. Additionally, I would like to examine how the role of game artist can change into game designer, and the difference between the two. I will evaluate how my previous art experience helped me in designing this game. I also conducted interviews with other game artists/designers to learn more about the link between the two roles. The interview findings are in Chapter 3.

In this thesis I will talk about casual games briefly and comparison of game design with art in general and then later comes the design of this project. After that will move to the two major parts of the project: preproduction, and production. In the production section I will be comparing game art with game design in terms of their process in game project pipeline. In the final chapter, I will be discussing what was successful and what was not during the course of this project.

The name of the project that I have based this thesis around is Bubble Ride, and this title will be used throughout. Initially, I was hired as the project's game artist. My academic game design background played an important role in my hiring decision, which for a new company in the gaming industry could prove an asset. There was another game designer, and both of us had the role of game designer within the project. Our team was small and based on highly

talented people in their respective fields: two programmers, a project lead/project manager, and a producer. Bubble Ride was my first project as a game designer. Because of my naivete as a game designer at the time, I learned quite a lot on working on a game like this and starting from scratch. In the beginning, we knew that we had to work on our own IP (intellectual property) casual mobile game. From there we began doing a lot of research, since there was a lot of pre-existing material, references, and examples. Our big question was what approach we should take, and we decided that our target group was children and young adults. Since casual gaming is a genre played by almost every demographic, we thought it would be helpful to focus on a younger audience in an attempt to help shape the content they interact with.

I would like to explain little bit about the my background, as well as the background of Xacti Oy, since in later chapters it will be important for the reader to have a grasp on my previous work experiences as game artist and as visual artist. In 2011, I came to Finland to pursue my master's degree in New Media. From the beginning of my studies I was interested in focussing on games, so I started taking courses relevant this this field in order to polish my skills and boost my working potential in game design. Luckily I landed in the right place, as the Finnish game industry was and still is booming. After a year-long period of struggling to be hired, I succeeded in getting my current position at Xacti.

Xacti Oy is essentially a software company that has branches in the USA, as well as in the Czech Republic. They started operating in mid-2012 within Helsinki under its current name. The branch in the Czech Republic had already had games launched and commercialized, such as 'The Vikings and Dragons,' as well as two other related games. They started an office in Helsinki later as a sister company, intended to primarily focus on games. It was 6-person team, which was enough to produce a small-scale casual mobile game in reasonable time frame. Their initial name was Taika Labs, and that particular company operated until June of 2013. From the beginning, we had this vision that we should work on a mobile-based casual game. We worked on this project for about 5 months.

I completed my previous degree in Fine Arts, and directly after these studies I began working as a game artist. Over the next 5 years, I worked as game artist for a couple of different companies. Initially I started as an internee 3D artist, working on PC/Xbox content. I felt very lucky to be able to work in my field so soon after studying. Currently I'm working at Kuuasema as both a game artist and game designer.

With the experience I've gained from my thesis project until the present day, I can see my progress since Bubble Ride and am able to more clearly understand what could have been changed, done differently, or omitted. It will be discussed in more details later in this paper.

2. Short overview on casual mobile games

Casual games are for everyone and everywhere. People play them to pass time. It's now not much different than reading a magazine at the doctor's office or doing a Sudoku on the morning commutes to work. The current mobile gaming market is flooded with so-called 'casual games'. Because these games are simple, they are well suited for devices with limited resources (Furini, 2007). The players of these games may not be hard-core gamers and simply play them every now and then. For example, I have a lot of games in my phone that I only play when I want to kill time or only download out of curiosity, since there are a vast number of new games being released every week. The popularity of games like these is making mobile gaming a successful and lucrative business market. As described by different research reports, the mobile gaming industry is estimated to generate between 10 and 20 billion US dollars as of 2011 (Furini, 2007). Casual games have the potential to break the videogame stereotypes of shooting games and male player machismo, especially for teenagers, reintroducing games as accessible for all age group and genders (Chiapello, 2013). The casual game phenomenon is widely acknowledged in the game design field. In 2011, The Entertainment Software Association (ESA) even introduced 'casual games' as a new category in their annual report about the videogame industry. Their report shows that casual games played on personal computers represent 20.6% of best sellers, a higher percentage than that of shooter games (Chiapello, 2013). Ubisoft CEO Yves Guillemot says, "In the long term there's no reason why the casual would not overcome the hard core business because there are more people that are interested in buying casual" (Weber, 2011).

3. Art, Game Art and Game Design

Before being a game artist and game designer, I am first and foremost a fine artist. In this chapter, I would like to discuss fine art in contrast to game design, and game art in contrast to game design.

Regarding fine art versus game design, or games in general, there has been a debate for quite some time if video games are or are not a form of museum art. Simply put, a museum's or gallery's audience is generally a different demographic compared to the audience of video games, including indie games as well (Pigozzo, 2014). Many visual artists use digital media in their artistic practices, and we cannot ignore the fact that digital art is a big part of the entertainment industry. The practice of a game artist versus a fine artist is separated by context, since the work of a game artist must take many different requirements into account (some of which are outside of their control). Space or environment is a great significance in these two art practices. A painting, installation, or many other types of fine art depend on the physical space in which the artwork takes place (such as galleries, museums, or site-specific installations). Even though there are plenty of works using digital media, they are still displayed within a certain contextual space. In comparison, game art takes place within video games that are physically represented within your TV, computer, or mobile phone screens. Contemporary visual artists are not sticking to one medium; rather they are exploring different materials and mediums that go with the concept of their work.

Concerning game art and game design, these two fields are quite different from each other. Nevertheless, game art without game design (or vice versa) do

not make for a complete game, and therefore they deeply relate to each other. The purpose of both is the same: to create a fun experience for the player. Game art is not heavily involved in the early stages of game prototyping, aside from having a rough idea about visuals (which I approach by gathering different visual references and making a mood board). In contrast, game design often starts much earlier than the game art aspects depending on the project; such as if it is heavily gameplay-oriented, is highly dependant on visuals, etc.

People frequently have the perception that game developers or game programmers are also game designers, which is only partially true. In earlier days of game creation a set of programmers/developers would come up with the idea, and the programmers were also responsible for creating the art. The quality of the art they produced was generally not equal to that of a professional artist and was a lot closer to the art, which nowadays we call “placeholder art” or “programmer’s art” (Rogers, 2014). Game artists can have their own personal expression in their game art, but it of course depends on the requirements of the game.

When I think about what it means to be a fine artist, I note that I generally have many creative liberties: even if I make a game as part of my personal work, I still have the freedom to express what is on my mind without worrying if people will like it or not. However, when designing a game or creating the art for a game for business purposes—especially in a start-up situation—the reactions of the audience must be considered. For myself, the game art I have made up to this point does not resemble my fine art style. In other words, I might say that I do not have my own style when it comes to developing the artistic assets of a game, since I have been following guidelines either because of the client’s wishes or because of what is trendy in similar commercial games. Figures 1 through 4 (below) demonstrate this difference in style and coherence of my work.

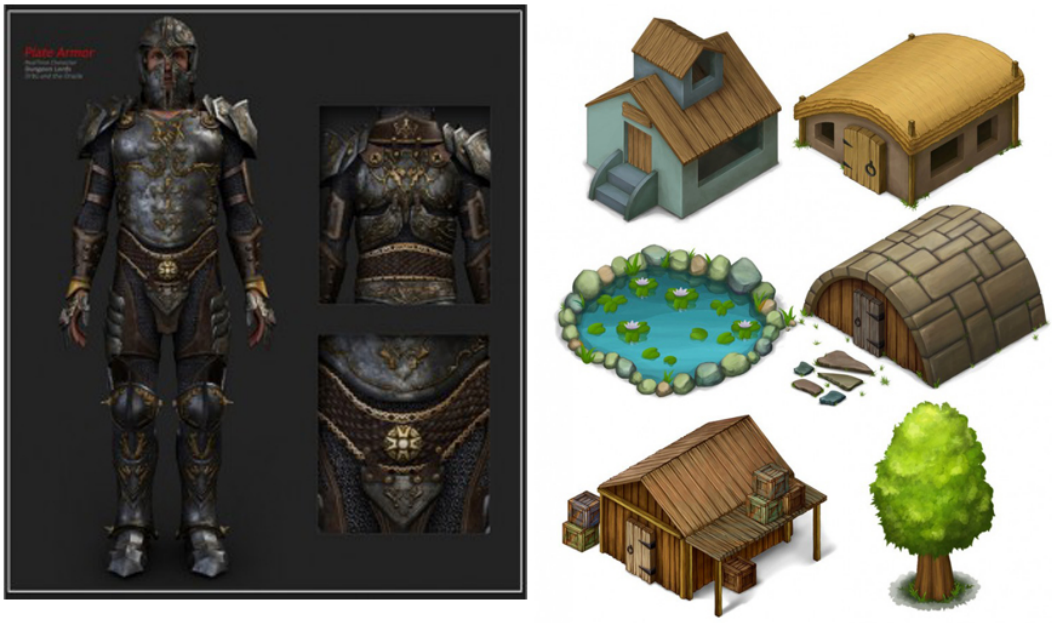

Figure 1 3D character and 2D environment design **(Adnan, 2014)**.

Figure 2 2D character designs, painted one on left, vector on right **(Adnan, 2014)**

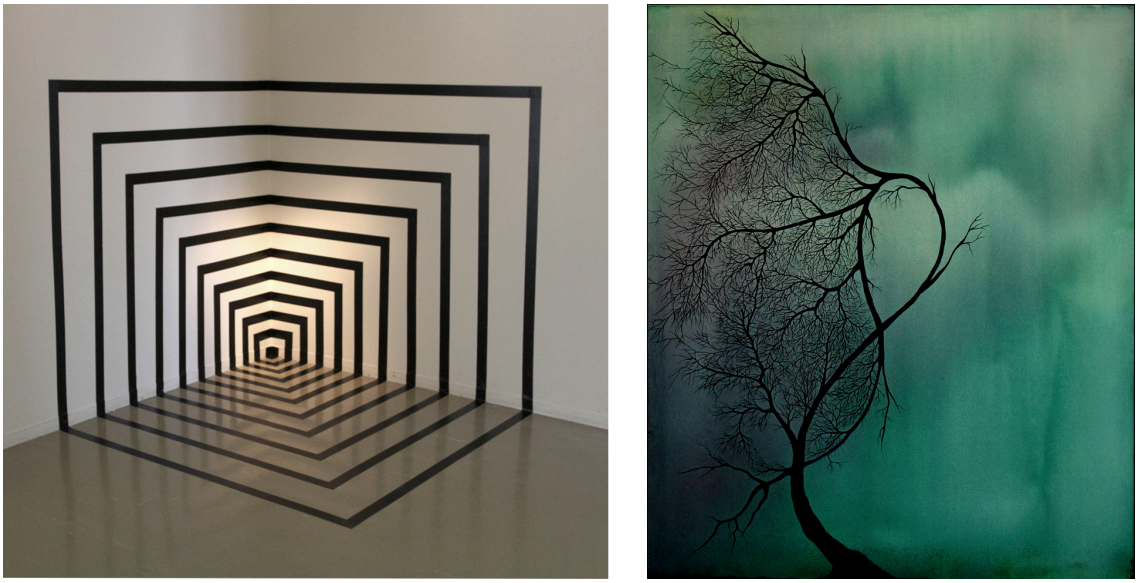

Figure 3 Border (Installation) 2012 Left. I'm Happy (2' x 1.5' ink on canvas) 2010 Right **(Adnan, 2014)**.

Figure 4 Untitled (2.5' x 2.5'mixed media on canvas) 2005 Left, Untitled (4' x 3' mixed media on canvas) 2005 Right **(Adnan, 2014)**.

There is a significant visual and conceptual difference between game art and fine arts. Regarding game art, I have broad experience in both 2D and 3D games. My art background is quite helpful for me to support my career as a game designer, but things are done differently in comparison to game art, as I explained on page 7. The knowledge I have gained regarding visual art, art

aesthetics, information regarding digital tools, and my passion for video games are the key factors that have helped me in my design career. Explained later in this chapter are a few uncommon examples of game designers who used to be or still are game artists, and their experience of the process. Also explained later is my documentation of the experiences of Finland-based professionals with a similar background. Before going further into analysing both roles side by side, I would like to first present a short intro of what does a game designer and game artist do.

- **Game Designer**

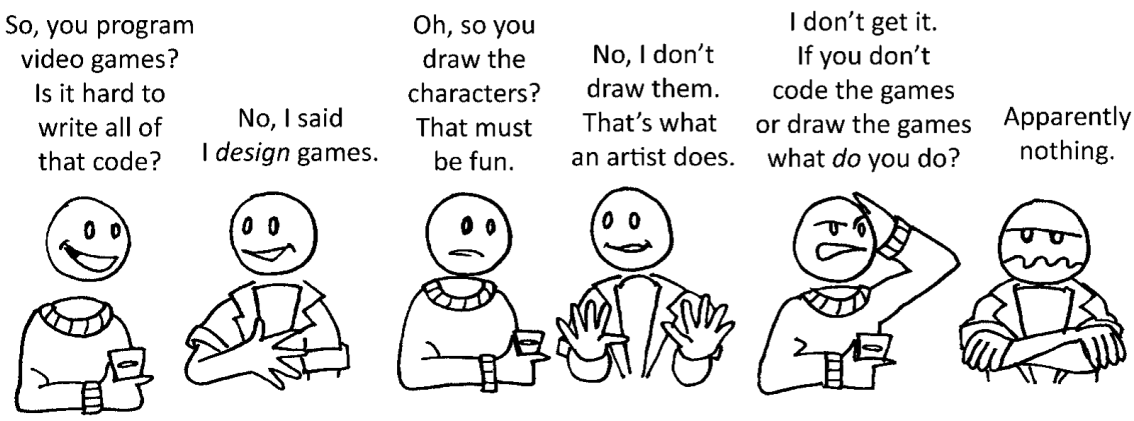

Figure 5 (Rogers, 2014)

These are the reactions I often get when I tell somebody that I design games. It gets frustrating at times to explain. Being a game industry professional, people often ask what a game designer actually does. Many people I know from various non-game backgrounds believe that game designer designs the visuals or graphics for the games. However, that is not the case. The designer generates ideas and develops them further until it is possible to play a basic interaction. Working on it further until it starts to feel like a game. A game designer essentially develops the set of rules for the game. Writing and maintaining the game design document and notes is also part of the job, but the game design document (a highly descriptive document for the design of the game) is not always necessary. Anybody who is passionate about games can be a game

designer or can come up with an idea, but ideas are easy to come by. The real task of a game designer is to translate these ideas into one easily communicated document (Fasce, 2014). However, many companies don't even have a game design document: in my past jobs as a game artist, most of the projects did not have a game design document at all. Instead, there was a small description of the game with roughly drawn mockups and few visual and gameplay references from other games. It is designer's responsibility to take care of the design process even if there is no formal game design document. Moreover, being a game designer, you are involved in each and every process.

- **Game Artist**

A game artist is responsible for creating a game's visual assets, either in 2D or in 3D. There are usually multiple game artists, depending on the size of the project. Bigger studios have an art director who supervises the lead artists and other artists. In the pre-production phase there is a concept artist who develops the initial concept of the game in visual form such as how environments, characters, etc. will look. In the production phase, the art assets need to be realized based on the concept art (Wise Geek, 2015). In bigger game studios, game artists are assigned for specialized roles. For example, if a company is working on a car racing game, they will hire a game artist who specializes in making vehicles. The same goes for character artists, environment artists, etc. who design these assets for the game. There are also 3D artists who specialize in characters, vehicles, environments, etc. In the beginning of my career, I started working as 3D game artist and more or less was doing almost everything.

3.1 Interviews from former Game Artists

The purpose of the interviews was to investigate how the role of game art is different than the role of game design, and how the interviewees' game art experience has helped them in the task of designing games. For this questionnaire, I sought out professionals who served as game artists earlier in

their career and now they are working as game designers. I conducted short interview sessions, which all took place face to face in a casual and friendly environment. The interviews were based on a one-page questionnaire with 8 to 10 questions regarding their experiences as artist and game designer. I would like to discuss what I feel to be the most crucial points my interviewees brought up. The set of questions that I asked each interviewee is in the form of a link, which is provided in the appendix.

Name	Age	Years of experience as Artist	Years of experience as Designer	Duration of interview
Teemu Kivikangas	33	2 - 3	8 - 7	15 min
Janne Piekkola	35	8 – 10	2	15 min
Minna Eloranta	22	2	1	15 min

Table 1 Game Artists/Designers interviewee's info.

Interview 1: My first job as a game artist was at Digital Chocolate. After that I was doing freelance work. I always wanted to design games but it was hard back then to find a job as a game designer. First time I got the chance to work as a game designer was at Kuuasema. I don't know how to measure if I'm a good game designer or a good game artist but I hope that I've gotten better. It is still like this that there are more jobs in the market for game artists than for game designers. I think a programming background is much more important for a designer than the art background but it is nice sometime to do game art to communicate better what you have on your mind (Kivikangas, 2015).

Interview 2: After my high school, I joined the first game school in Finland that offers a sort of a diploma or a course. I have been working as game artist for some time mainly on 3D artworks. I have good ideas about game works and I always wanted to do something else too more than just game art so here I am. And these days, there are game designers jobs in the market but before that couple of years ago, a game art job was kind of easy to find but not a design

jobs. I would like to continue doing game art too in future. I think it's a good thing to have some game related background for game designers. Great designers always have such a background. I think I'm just ok as a game designer and as a game artist. I don't play many games to get inspired because in my opinion it messes your mind. But in general I would prefer you to play lot of games (Piekkola, 2015).

Interview 3: I'm doing my bachelors studies and currently working on my thesis. I have mainly worked with graphic design, sometimes illustrations too. Game art and game design are minor roles for me. I think it is very necessary for artists to have some kind of design sense especially when they are working on game UI stuff. Then you can design/create stuff keeping what game audiences would is more likely to like. I think it's easier for an artist to find a job these days than a game designer. For a game designer you really need to have some kick ass titles in your portfolio otherwise you can't really prove your skills (Eloranta, 2015).

I can relate to how they think about their transition from artist to designer. Teemu stressed on having background of programming over game art (Kivikangas, 2015). Often I feel that I should gain knowledge of programming as well, which could help me to work on my own ideas independently. I agree with Janne that it's great if you have some game related background before you become a game designer (Piekkola, 2015). When it comes to finding references for a game's starting point, game art is more visual. When finding visual references, it does not take much time while looking at an image reference to collect for mood board and move forward. Whereas when it comes to finding a reference in the form of a pre-existing game, referring to the games that you have already played or playing new games to gather new gameplay experience are two standard approaches. If some iteration in the game art is needed, it's easy to make changes. If the game engine or editor is familiar, simply updating the sprites or 3D model is a good approach. Most often help isn't needed to change iteration in the gameplay, though the external help of the programmers

if one doesn't know how to make a small change in the code. Most of the interviewees agree with me for the reference and the iteration aspects. Regarding this point Minna said, "Workflow for the game design is different than the workflow for the game art. This process needs to be agile, and coders need to design a system where designers work less dependently upon programmers" (Eloranta, 2015). I can relate with this statement of Minna's where she talks about the designer's dependency upon programmers. I have experienced this problem often if I needed to change some basic interaction or gameplay in my prototype. I often need the programmer's help to make it work. It's beneficial for designers to have a bit of programming knowledge so they can make these small changes themselves.

4. Design

4.1 Game Idea

Every game project starts with an idea or an inspiration. Some games revolve around their narrative, some focus on their gameplay mechanics and some are art-oriented. As an artist, my approach was that I would always have some kind of inspiration before I would begin working on a game. In this chapter, I would like to discuss the initial idea, story, gameplay and inspiration for Bubble Ride project. In my career as a game artist I have mostly worked as general game artist, not specializing solely in characters, environments, vehicles, etc. Just like I don't focus on one element within the game, I also don't have any specific genre in mind; I'm very much interested in designing new ways of interacting and unique gameplay, therefore genre does not matter much. When I was about to begin working on Bubble Ride as an official designer, I had few inspirations from old arcade games. I have a soft spot for arcade games, which are a nostalgic part of my youth and still pretty cool to me. In the 90s I used to play a lot famous Japanese arcade games from TAITO, such as the horribly addictive Bubble Bobble. It was first released in 1986 for many different game platforms, such as home computers and consoles. Bubble Bobble heavily relies on its unique gameplay and precise technique rather than its graphics (Gaming History, 2015). In 1994 a sequel called Puzzle Bobble—also known as Bust-a-Move—was released. Both of these games have a totally different gameplay, with the bubble being the only commonality. My inspiration is mainly based on Bubble Bobble, where one player shoots bubbles towards the enemy and captures them in bubbles, subsequently turning them into food. The player can

also ride inside his own bubbles. Whereas in Puzzle Bobble, the player is supposed to match the same colored bubbles to remove them and proceed further in the game, just like any other ‘match three’ or ‘color match’ type of casual mobile games. The image of the character inside the bubble and idea of matching the colors were something that was in my mind for a while. The goal is to catch and ride on the rising bubbles to navigate your way through increasingly complex levels. In addition, you can earn color combo bonuses and collect rewards to trade in for power ups and personalization items. There are obstacles that challenge the player as they make their way up.

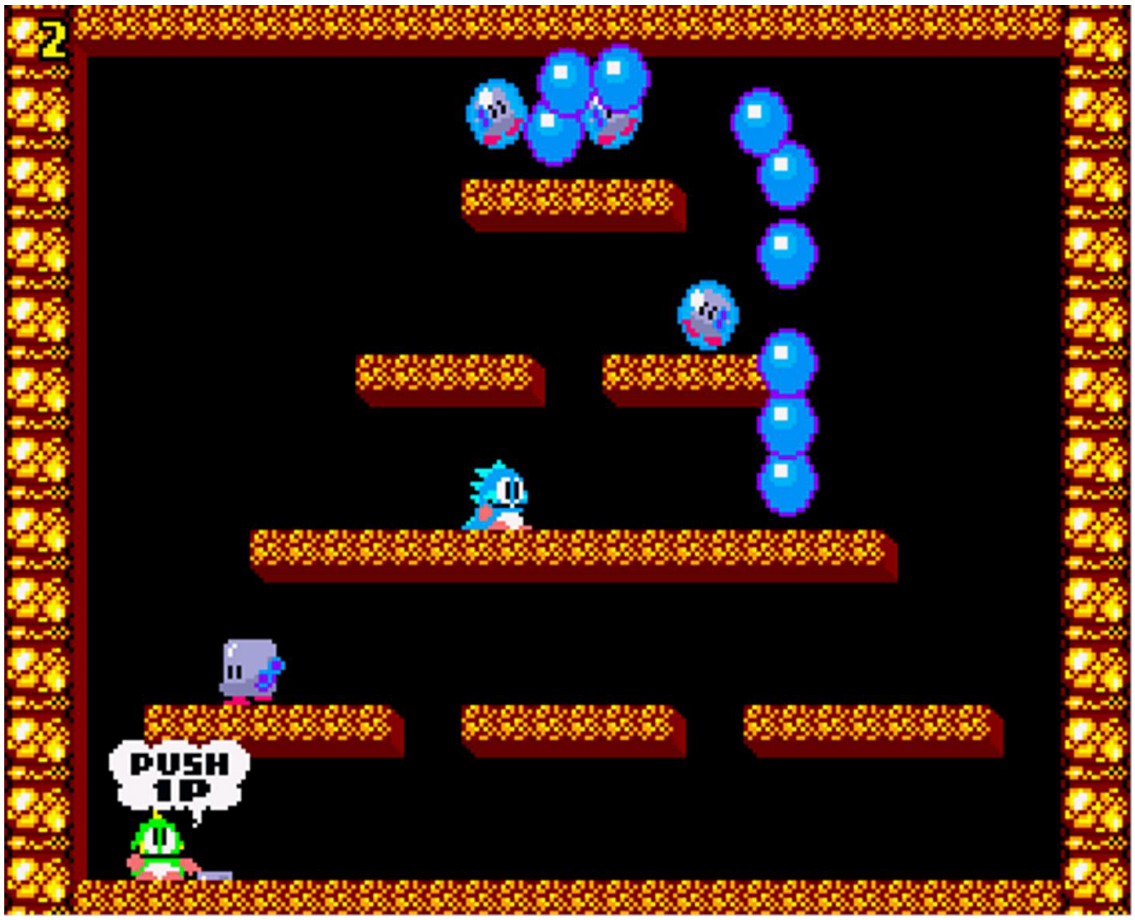

Figure 6 Bubble Bobble Gameplay screenshot **(Games Database, 2013)**.

Figure 7 Puzzle Bubble Gameplay screenshot **(GIGA Gamers, 2014)**.

4.2 Initial Design

The original design of Bubble Ride was also heavily inspired by Doodle Jump. Doodle Jump features simple but addictive gameplay: the character must jump from a platform to another platform by tilting the phone from side to side. The iPhone game review blog Touch Arcade called it “possibly the best iPhone game ever created” (Chiang, 2010). The reason why Doodle Jump was and still is successful was because of its very accurate interaction according to the gameplay for smart phone technology back in 2009.

Initially we had designed Bubble Ride to be an endless climber game, but because team wanted to have it level based game like Angry Birds or Cut the Rope, we altered the mode of the game from endless gameplay to level-based design. However, we saved the endless game mode for future updates. Initially there was no story for the game. It was supposed to be conceptually simple, matching colors by jumping to similar-colored bubbles, and making color combos along with achieving height to keep improving the score. The main issue

most of endless games is that at some point the system seems to overpower the player, and if the computer cannot be beat the player will become bored and quit playing. That is, unless there is a good monetization design that makes player feels that they have achieved something. Since I had and still have very little experience with game monetization, the team wanted to spare it for later updates. We wanted to go with iterative game design—a process by which a video game is repeatedly prototyped, play tested and reevaluated prior to a working product release (Janssen, 2015). However, we did not iterate the design in this stage, as we wanted to playtest it after finalizing our first design idea.

4.3 Story

My personal experience shows that it is not always necessary for a game to be designed around a story. Sometimes it so happens that the narrative or direction of a game can be based around a simple concept, which is the case with Bubble Ride. There are also a lot of casual mobile-based games that have short story, a well-known example being Angry Birds. Derk de Geus humorously explains the Angry Birds story as follows: “The story of Angry Birds is very short. Is it a story at all? Yes. The birds are on a mission. They hate the guts of these pigs. The Angry Birds story is one of thievery, sacrifice, parenthood, and ultimately revenge” (Geus, 2012). The narrative and purpose in the game is simply that the birds are there to mess with the pigs. The story behind Bubble Ride is a short one: one fine morning there is a squirrel sleeping in woods and when he wakes up, he finds that he’s hungry. He sees two kids having a fun time in the forest blowing bubbles. The bubbles are moving up right before his eyes. In an instant he has the realization that he can use the bubbles to get to delicious food...nuts! From here on in, the player is supposed to realize squirrel’s idea. In each level, there is somehow a slightly different narrative, but the difference is only slight and gradual. Below is a series of images from Bubble Ride that explains the story at a glance.

Figure 8 Story sketch Bubble Ride.

4.4 Gameplay

The main character gets inside the bubbles and travels by jumping from one bubble to another. Sometimes there are platforms where a player can collect the nuts, but since the game has time limitations, a player cannot stay on these platforms too long. To travel from bubble, the player simply touches the bubble the character is currently in and launches the character to the destination bubble. The goal is to collect all the nuts and move towards the exit nest. Dynamics are something that the player experiences while playing the game and game mechanics enables the dynamics to achieve the goal (Brenda Brathwaite, 2008). To use Angry Birds as an example, the player shoots the bird from a sling, aiming for the desired location towards a set of blocks to break them. This process keeps repeating level by level, using differently composed sets of blocks. When comparing these dynamics with that of Bubble Ride, though the player keeps jumping from one bubble to another, the dynamics gradually change when game system introduces new obstacles, player-friendly objects, or bonuses.

The diagram below shows the basic game flow based on the current game mode. Game flow for this mode is not complex to understand: the right circular loop is for the winning condition, and left one is for losing state. The game dynamics take place in between the start point and exit point/time out point.

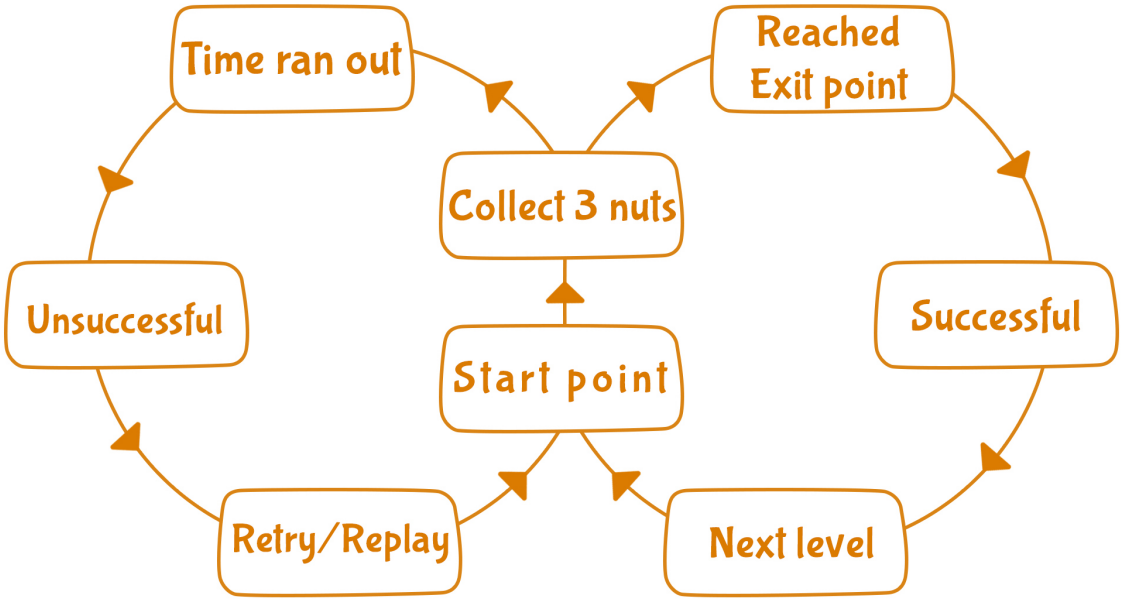

Figure 9 Basic game flow.

4.5 Mechanics

Jesse Schell is an American based game designer, CEO of Schell Games and an author. He explains in his book (The Art of Game Design: A Book of Lenses) that linear entertainment such as books and movies may have involved technology, story, and aesthetics. However, they don't have mechanics. It is mechanics that make a game a game. Mechanics describes the goal of the game and tells players how they can achieve it, and what happens when they try to achieve it. (Schell, 2008, p. 41). Schell further explains that there is no universally agreed upon taxonomy of game mechanics because every game has different mechanics. Even the simplest games have complex mechanics (Schell, 2008). The

mechanics of the Bubble Ride based on simple interaction but can become tricky as player progress in the game. Since the bubbles in Bubble Ride are moving upwards slowly, the bubble in which the character is in will stop moving for 5 to 8 seconds in order to allow time for player (keeping in mind that this game is youth-oriented) to decide the next step. A time display meter is on top of the screen showing this countdown. If, however, the player is unable to decide within the given time where to jump, it will automatically launch the character in the current direction with the current jump strength. The jump strength and direction are represented by means of a circular interface with an arrow. By moving their finger around the circle a player can aim, and by moving their finger closer or further away from the center of the circle, a player can adjust the jump strength (Figure 12). The player can increase and decrease the size of the circle according to how much jump strength they require in particular situations. Though the circle size can only be increased to a limited extent, it can be expanded more by using coins or power for a certain number of increases. Once the player jumps from their current bubble, the bubble will then pop (Figure 10).

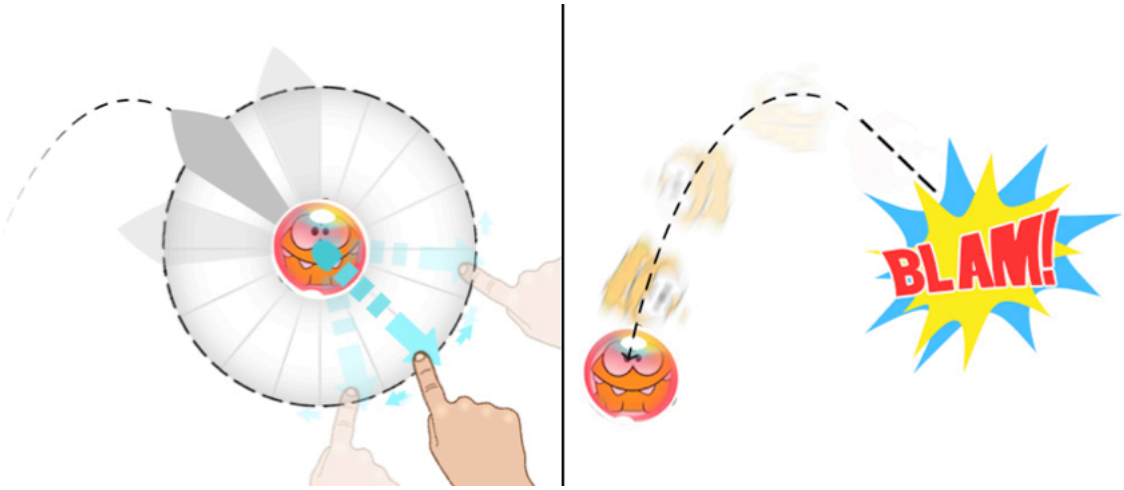

Figure 10 Basic interaction.

4.6 Goal and Progression

The ultimate goal of every level is of course the successful condition outlined in Figure 11. This game's main objective is to collect the three nuts that are placed in different locations of each level. Once the player has collected all three despite the time limitations and other obstacles, the player must then start jumping towards the nest in order to complete the level. However, if the player makes combos (such as jumping from one color bubble to another bubble of the same color) the ability to upgrade jumping strength and jumping style is increased. Longer combos generate more gold and orbs that can buy these upgrades.

4.7 Camera and Control

Scott Rogers is a game designer and creative director for over 50 AAA games (including Disney, Sony, Capcom, Namco and THQ). Scott Rogers describes that a game's design is always changing, and that there are three fundamentals that need to be established early in the pre-production process. He calls them "Three Cs": character, camera, and control, however, if you change any of three Cs during the production phase, you can have massive problems in the resulting gameplay; so many game elements hinge upon these three Cs that altering one can have a detrimental ripple effect of your entire game (Rogers, 2014, p. 83).

I will discuss about character in section 6.1.1 later in this paper, but for now I would like to focus in this section firstly on camera, and then control. Choosing the appropriate camera for a game's early designs is not only very aesthetically important, but it also impacts how a game is designed (Rogers, 2014). With Bubble Ride, we were pretty clear early on that our camera would be a vertically scrollable one that follows the main character wherever he goes. We decided on an automatic camera view because there are often a lot of unwanted things that can happen when players are given control of the game camera. For example, making the player control the camera when it is

unnecessary to do so can cause extra stress for the player and detract from the overall experience greatly. It is often the case anyway that in a casual mobile games the camera control is not given to player. This is to give less tasks to the player, thus letting them focus on the actual gameplay.

Regarding Bubble Ride's specific camera behaviour, the figure below demonstrates how a scrollable camera works. On this hypothetical desktop you can interact with all the objects on the desk that are presented within the grey box. However, you can't find your pen, which is outside the grey box. Scrolling or moving the camera will enable you to find the pen (Rogers, 2014).

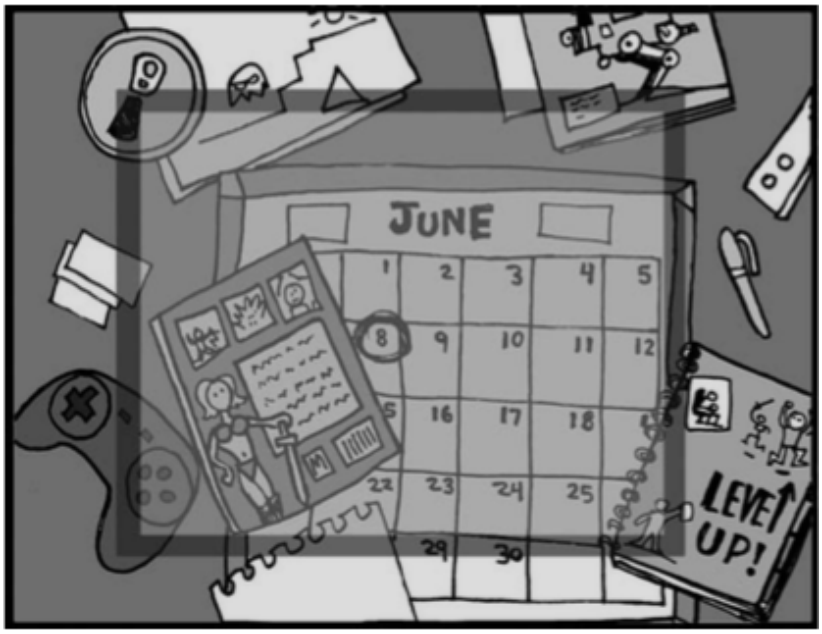

Figure 11 Scrollable camera example **(Rogers, 2014)**.

Later we decided to add parallax scrollable camera where the background and foreground objects are divided in layers, which will be discussed further in the Background chapter 6.1.2. The world moves with the parallax-scrolling camera as character moves. Parallax scrolling revolutionized the games and allowing developers to create longer and deeper game worlds (Rogers, 2014). It creates the illusion of depth in 2D games and allowing the player to experience more realism while moving around in the game. For example, objects in the far background in the scenes such as mountains or cityscapes do not disappear from the view compared to the objects that are very close to the camera.

4.8 Planning Future Updates

We were planning at the time what sort of future updates we were going to have. Part of this plan was to create new themes consisting of an expansion that allowed for new visual themes and gameplay mechanics. We knew this would be one of the more difficult future ideas to implement, as adding new mechanics always requires thorough testing and development. As stated, this expansion would be a twofold update consisting of new levels for the game, as well as new thematic settings that could change the game's visual appearance. Regarding the thematic settings, it could be something as mundane as a seasonal update reflecting the weather conditions, or something as extreme as a new planet where the visual color palette would be completely different. This would also include character customization. There are currently no future updates in store for Bubble Ride. Originally, we had plans for adding new design features in upcoming updates, and would be willing to implement this if the company wanted to continue with this IP. However, the current game only contains an arcade mode, in which players beat each level in order to unlock the next. The game contains 30 levels in total. On top of the arcade mode, we were planning to add different game modes to attract players who like the option of playing online with other players or locally with friends. Different game modes we were considering are as follows:

- **Arcade Mode:** This is the current game's only mode. However, our initial plan was to launch it with different themes in which the game background and its elements would be changed according to the theme.

- **Survival Mode:** This mode would be endless. The play continues to move upward, facing a variety of obstacles and try to beat their own high score.

- **VS Mode**: This mode is same as survival mode except that the player has an opponent to beat. Whoever scores more will win the challenge via Bluetooth /

WIFI (local). A player can also challenge random players from an online players list.

4.8.1 Adding Monetization

The current version of the game is free to download and no monetization has been added. However, in futures updates players would be able to buy a full version with more worlds and levels. This future version though can keep the player in the mindset of being free to play, not paying to win. In some countries such as Russia and China, players paying to win is entirely acceptable, however, our game would be able to support both approaches. This does not have applied to new content, such as theme updates and level updates when going from light version to full game.

5. Preproduction

Preproduction is the first phase in production cycle, and also a critical one. This phase defines what a game is, how long it will take to make in total, and how much team resources are needed. In this chapter, I'm going to talk about the technical preparations and limitations for the game, as well as prototyping. The purpose of the preproduction is to come up with a game plan, which serves as a roadmap to finish the project. The duration of the preproduction can last from one week to more than a year, depending on the project and how much time is allotted to develop it (Chandler, 2013). In the case of Bubble Ride, the preproduction phase lasted for 3 to 4 weeks.

I found this phase most interesting and most beneficial as a game industry professional. In my previous projects as an artist I never had a chance to be part of preproduction. Since I was working as a game artist, my role generally began once the production phase commenced. By then, the preproduction was already wrapped up, and it was the art director who would have taken part in the pre-production-related meetings and discussions. This was not always the case, sometime there were some concerns related to art content and discussions with art team regarding game engines and technology in terms of graphic support etc. I'm not so much of a technical person when it comes to computer graphics. However, by having the technological sense towards computer arts I believe I was able to grow a lot as a game designer within a short amount of time. Researching the tools and engines for this project, I had gained decent amount of knowledge that was beneficial for me as designer as well as an artist.

Since we were aiming for the 2D game, we already had a rough idea about 2D engines. Once we finalized the idea (Bubble Ride) I started to write my

first game design document. A game design document helps other team members to understand the idea better. This document includes the game concept, introduction details, background, and key descriptions. After we did our first prototype test of Bubble Ride's concept, it started to become refined, detailed, and specified. The design document was kept up to date throughout the pre-production phase, based on those initial tests. I will talk about prototype later in this chapter (see section 5.3).

5.1 Limitations and Constraints

"I think frugality drives innovation, just like other constraints do. One of the only ways to get out of a tight box is to invent your way out." - Jeff Bezos

Since the beginning of the project, there were constraints that in one way or another affected our decision making at that time within the working environment where we produced the game. Constraints are a natural and inevitable part of the working process. Though my comments in the beginning of this paper regarding industry constraints may have sounded negative, I believe constraints are an essential aspect of game development. When we are asked to do a game project, we would like to have freedom to express ourselves freely whilst having enough money, time, and resources as we want, but it happens very seldom. Though counterintuitive, it would not be wrong if we say working under tight budget, limited resources and time often proves as best practice in terms of making quality product (Arcila, 2012).

Apart from technological constraints, there are some aspects of the industry that also create constraints. It is not necessary for all company members to be passionate about games if your company already has some games launched that create enough revenue for the company to survive. However, if the company is a startup, it's necessary to know the market trends, players' needs, and competitors. Though all the people who worked on this game have good gaming backgrounds, the company's intentions were more business-oriented. That in and of itself is not bad, but that meant there was not much margin to

experiment with different ideas. Instead, we needed to have a more commercial approach, which felt like it restricted our ideas kept us inside the industry standard's box (Drysdale, 2015).

Working on any project without any kind of constraint or less constraints sounds dreamy. But sadly no, you can't make a successful game without constraints. According to David Arcilla (Arcila, 2012). Duke Nukem forever and Daikatana game never released or released very late, best example of Vaporware because they did not have any constraints.

5.2 Choosing the technology

Considering above-mentioned thoughts in relation to my project, I faced couple of limitations/boundaries. It was a relatively new experience in my career to look for game engines, keeping in mind the graphical and animation requirements for Bubble Ride. Getting to know the graphical restrictions and finding solutions (or comparing other game engines) was like completing a puzzle bit by bit. Early in my artistic career, there were also small tool restrictions, but I saw them as merely tool-specific problems. We were looking to develop the game on a 2D tools/engine such as Cocos2D. That meant that we might have needed to slightly modify the interaction according to the engine specifications. In comparison, if I were working on my own personal project, I would have chosen the engine according my idea's needs rather than choosing/modifying the idea around game engine. However, even with the constraints of the resources and their skillset, tool-specific limitations, and the company's priorities regarding freeware and budget, it's still no excuse to not to make a good and fun game. Our initial idea was to develop the game in Unity3D, since this tool is intuitive even for non-programmers, even though I was not particularly familiar with Unity at the time.

As I quoted Jesse Schell in chapter 4, every game idea has mechanics that make it a game. To support these mechanics, you need to have the appropriate technology. According to Schell, it is hard to study stars while sun is out. It is likewise hard to study game design when technology is in the room. Technology

can be at most unpredictable and dynamic (Schell, 2008). When I talk about technology, I'm not referring simply to something computer-related or tech savvy. Technology is every medium used in the game development process, from prototyping to the finalised game. This even encompasses the paper and Post-Its used to brainstorm the initial ideas and interactions for Bubble Ride. I will discuss this in more detail in the following subchapter on prototyping. Technology is something that is less visible but it definitely plays a significant role in game-making. As Schell explains (and as is shown in figure 12), technology is the fourth basic element in game design after mechanics, story, and aesthetics (Schell, 2008, p. 41).

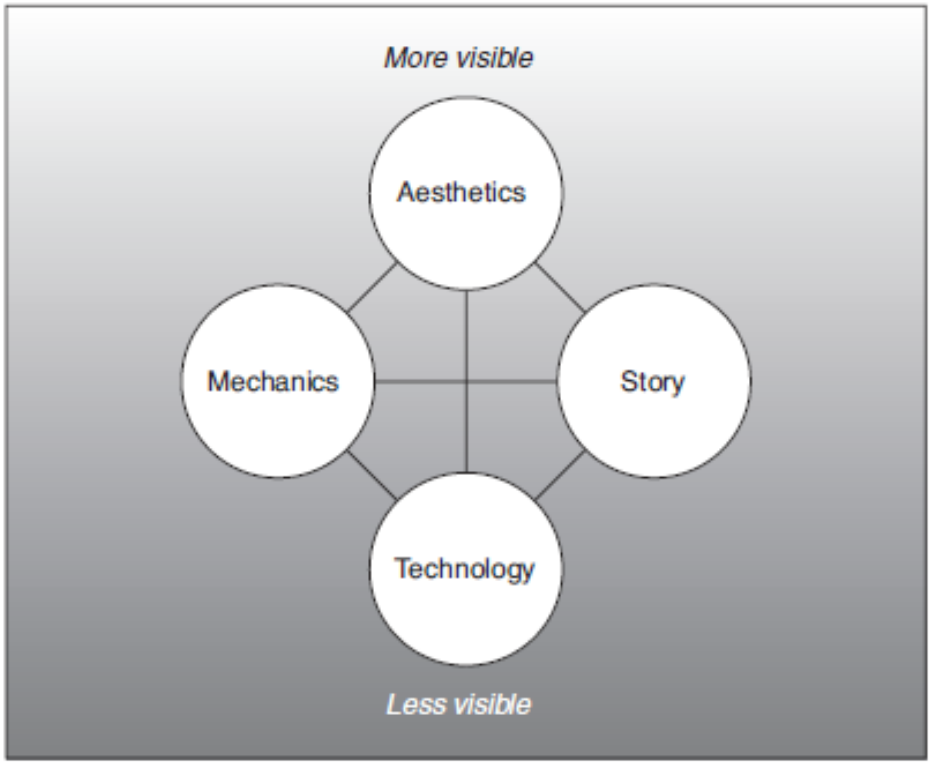

Figure 12 Four basic elements for game design **(Schell, 2008)**.

Choosing the appropriate available online game engine for Bubble Ride was technically tricky, since we had to take into account the nature of the gameplay, company's budget, and programmer's fluency. Before finalizing one, we spent some time on reading up on game engines, which was one thing I never got the chance to do while working an artist. When I was a game designer, it was my responsibility along with the programmers to decide which tool would

be most suitable for a game's implementation. I had not had much prior knowledge about game editors, but that was the exciting part: I got to gain a basic understanding about game engines. Whereas before I used to care only about how the graphics looked in a particular engine (mainly 3D engines), I often overlooked the fact that team capabilities and a command on a particular game engine is more crucial. I came across many useful links that served my game design knowledge and got to know a about couple of basic 2D based game engines and how they worked.

Our research was to find the most suitable 2D game engine for the game, keeping in mind the programmers' specific proficiencies. The programmers felt more proficient using Cocos2D, so we decided to go with it because of technical reasons and because it was technically suitable towards simple interactions in the concept of the game. Listed below are some 2D/3D level editors or game engine we studied before we decided on Cocos2D:

- **WOG Editor**

  WOG editor is a level editor for popular puzzle game World of Goo (http://goofans.com/, 2009).
- **Scope 2D**

  Scope2D is open sourced level editor. You can create levels like in Braid. (http://www.monkey-x.com/, 2014).
- **LevelHelper**

  LevelHelper is 2D based level editor, which Cocos2D also supports (http://www.gamedevhelper.com/, 2015).
- **Unity**

  This is the most famous game engine these days and supports 2D and 3D both. We wanted to go with this but company thought it would be expensive so we dropped this out (https://unity3d.com/, 2015).

The other reasons for the programmers choosing Cocos2D, rather than an engine like Unity, was because it is free and open source. They rejected WOG and other game editors for having less features compared to Cocos2D.

5.3 Prototyping

Prototyping is usually the phase in which you start to get the feel if your game idea is fun or not. According Jesse Schell, every prototype should be designed such way to answer a question and sometime more than one question. Listed below are some sample questions a prototype might answer:

- How large does a level of this game need to be?
- Is the core gameplay fun? Does it stay fun for a long time?
- Do our character and settings fit together well aesthetically?
- How many animated characters can our technology support in a scene? (Schell, 2008, p. 86).

What and how many answers you are looking for depends on the game idea and mechanics. But it is also possible to make a prototype without having any specific question in mind. Before starting the digital prototype, I wanted to get a feel for it with a paper prototype because paper prototyping is easier and faster than digital prototyping in almost all cases. With the concept of Bubble Ride, it didn't work as we had anticipated; it cleared some concepts of how the bubbles will come from the bottom of the screen and where exactly we would have to put the bubble generators. We then started digital prototyping with Cocos2D using placeholder graphics.

The time came to test the basic interaction. It didn't seem fun or ideal in the beginning of testing. I wanted to scrap the idea. When I was creating game art, I could readily decide if a certain asset or concept was worthy or appropriate. Because of my lack of experience as a game designer (remember, this was my first time in this role), I was lacking confidence. However, after tweaking the bubbles' speed and reducing the amount of bubbles being generated from the bottom of the screen, we started to have good a feel. Here is a screenshot of an early prototype, pictured below in figure 14:

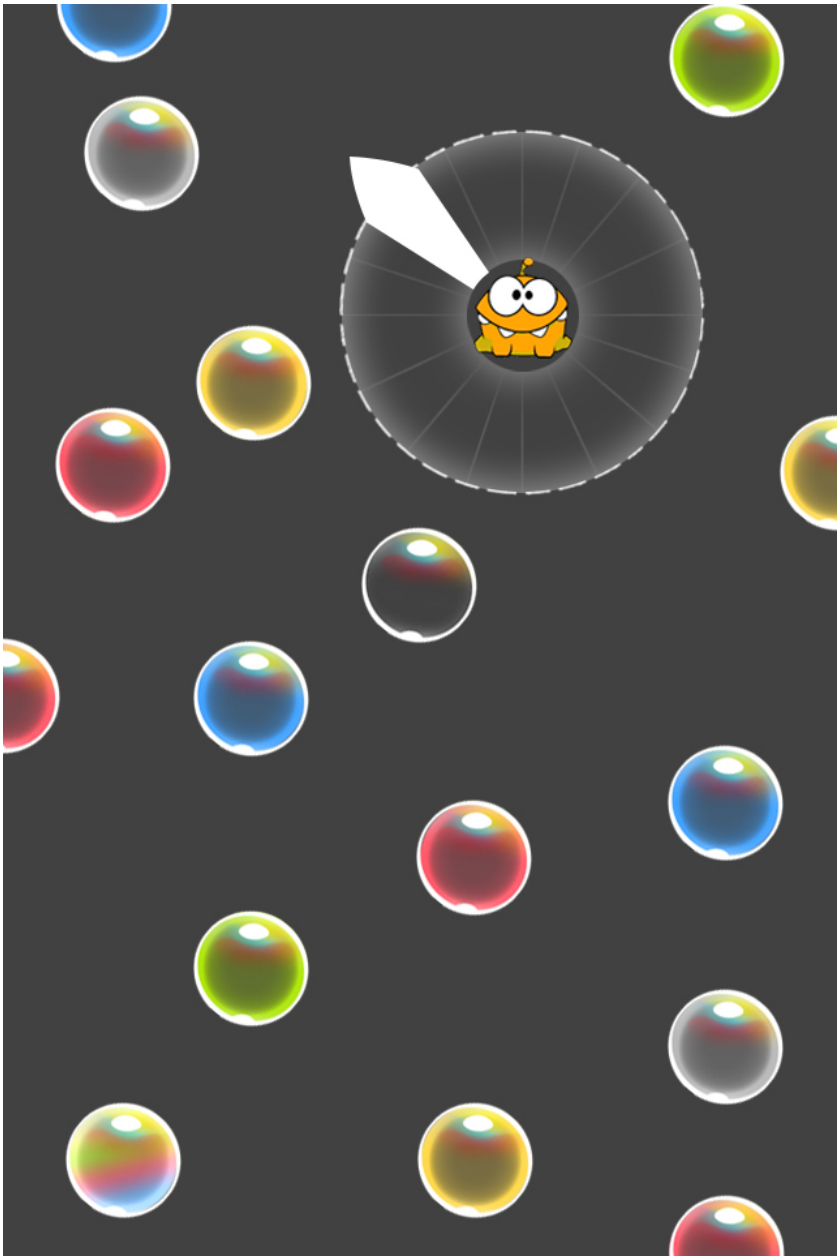

Figure 13 Early prototype screenshot

6. Production

After finalizing the game concept and choosing the right engine according to our team expertise, we moved to the production phase. We spent some time looking for similar games to study as references, which is also something I used to do while working as a game artist. Together with the producer, programmers, designers, and artists, we kicked off the project. Every day we had a small meeting where each team member had the chance to tell what he or she have been doing and what they are intent to do. At this point in the process, the producer plays a big role, deciding what is important, and in what direction are we going. In my previous work experiences, I was neither involved much with the programmers nor producers. However, for Bubble Ride I got the chance to work more closely with both. This improved my communication, project management knowledge, and technical knowledge of the overall game production pipeline. We kept our project management very agile. Agile project management is an iterative method of managing the design; the purpose of agile management is to track the project progress, make iterations if needs and keeping updated on every task by every team member on daily basis. Overall the production phase went smoothly, although we had few feature creeps. We spent between 4 and 5 months on the project, including pre-production.

6.1 Art Style

An artist should have good knowledge of popular culture, which can also be quite helpful for game designers. When the reference from mainstream is

provided, players feel a familiarity that can evoke different positive emotions. Game art must always complement the gameplay and the game's concept. Game graphics are the first thing that a player sees in any video game, whereas game design involves technical and logical based aesthetics. Video game art serves the player's visual sense, but game design can involve numerous senses and can evoke a variety of emotions in the player. It is not just about designing a game—it is also about designing an experience. Game art helps enhance this gameplay experience. Back when graphics were not evolved, gameplay experience was totally based on a game's mechanics. Nowadays, game graphics can carry the gameplay experience much further.

Those of us designing Bubble Ride considered many casual games' art style popular at the time to what we were creating. We wanted to have a more commercial, cartoon-style art. Since the beginning, I had the vision that this game was supposed to be in a cartoon style. Apart from main character, I wanted the rest of the assets to be a mixture of cartoon and realism. Though my colleagues helped me to choose the art style that suited Bubble Ride the best, I was still the only artist. Therefore I had responsibility in finalizing the art style. I was really inspired with the art style of Cut the Rope (see figure 14), since its main character and interactive objects are in vector style and background looks like mixture of vector plus raster (see glossary for clarification of these terms). This mixture of vector plus raster graphics gives a clean and unique look to the art assets. And it inspired me developing Bubble Ride's visuals from it. There were many other games that we referenced for their art style, the following two examples (depicted in figures 14 and 15) being Mega Jump and Awesomenauts.

Figure 14 Screenshot from Cut the Rope **(http://www.mobygames.com, 2011)**.

Figure 15 Screenshot form Mega Jump **(Nelson, 2012)**.

Figure 16 Screenshot from Awesomenauts **(Hillier, 2012)**.

The most important thing for this phase was to proceed predominantly with the game art that involved character design and environment design. This was the department where I was most comfortable with, since I had the experience producing game art content in the past. I didn't feel that our game had a unique art style, so we tried to follow an art style that is well-known in its genre (such as casual, 2D, and platformer games).

6.1.1 Character Design

When developing a character for your game, it's important to think about his/her personality (Rogers, 2014). The main character of Bubble Ride is a squirrel, so I wanted to come up with something cute, fluffy, and active. Initially my main inspiration was Cut the Rope's Om Nom, who is funny, cute, and happy. I started to doodle, trying to find the best look and feel for the character. Being a designer for this game, I was much clearer about what a character should be like and what his or her personality traits would contain. After some sketches, we found the right look and feel for our main character.

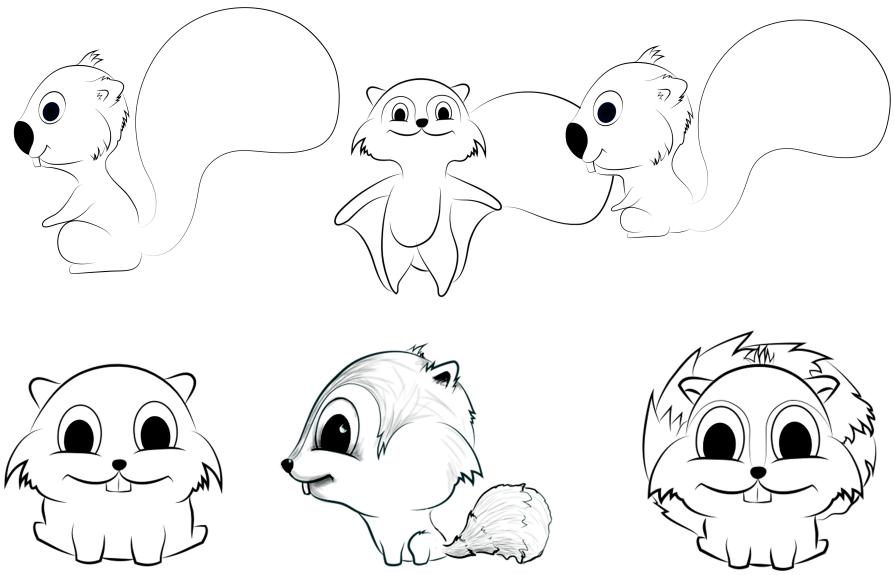

Figure 17 Character sketches.

Figure 18 Main character the Squirrel.

6.1.2 Background Design

As discussed earlier, our camera is vertically scrollable. We divided the background into seven layers to add the parallax-scrolling camera. Figure 22 shows a breakdown of background sprites 1 through 7. Sprite 7 is the closest to the camera, meaning that the rocks shown in sprite 7 disappear from the camera view as the player moves upward/downward. Sprites 1 through 6 gradually move along with the camera, and most of them stay in the camera view at all times.

Figure 19 Bubble Ride Background Art breakdown in layers for parallax scrolling camera.

Mega Jump (Casual mobile game) was quite close to what we wanted to achieve. It is an endless climbing game, and though Bubble Ride is not an endless climbing game (but perhaps would have that mode in the future) the mechanics and layering of sprites behaved in a way similar to what we wanted. Image below (figure 22) shows the background art from Mega Jump, which

merges from bottom to top to make a long background (Brosa, www.deviantart.com, 2011). This resembles what I have planned for the survival mode.

Figure 20 Mega Jump background art **(Brosa, www.artician.com, 2012)**.

6.2 User Interface

The user interface of a game can be the most challenging aspect of game development, since there can be a lot of information needing to be displayed to the user (sometimes on a particularly small screen) (Russell, 2011). Progressing in the game means the game state keeps changing, and this constant change needs to be communicated by a display of information. To keep a player updated there needs to be an interface that communicates with the player. Casual games and video games in general uses a term called HUD (head-up display). A HUD is a transparent display showing the game results and game state data without requiring a user to look away from their usual viewing point on the game screen. This type of display is an important part of the user interface design, and one has to design it in a way without distracting the player. It displays several pieces of information simultaneously, such as how much time is left, how many coins or points a player has collected, the character's health meter, etc. The HUD's information varies in each game (Erik Fagerholt, 2009). A HUD's elements may also display different information depending on the game mode the player is currently in. In Bubble Ride, the HUD displays the score, the remaining time, and pause and replay buttons. Apart from HUD, other UI overlays and icons used were universally recognized icons in mobile games.

Figure 21 In-game HUD Bubble Ride

Figure 22 Other UI and overlays in Bubble Ride.

6.2.1 Screen flow

Screen flow is not something that is immediately visible. Rather, it is an intuitive experience a player feels while switching between user menus, settings, and gameplay screens. Making a screen flowchart in advance helps a designer to develop a smooth user experience for the player. There are 4 divisions in Bubble Ride's interface:

1. Splash screen
2. Menu and option screen (displaying game modes, settings, etc.)
3. Sub menu (level select, instructions)
4. Gameplay screen (HUD) and Win/Lose overlay UI is part of overall GUI.

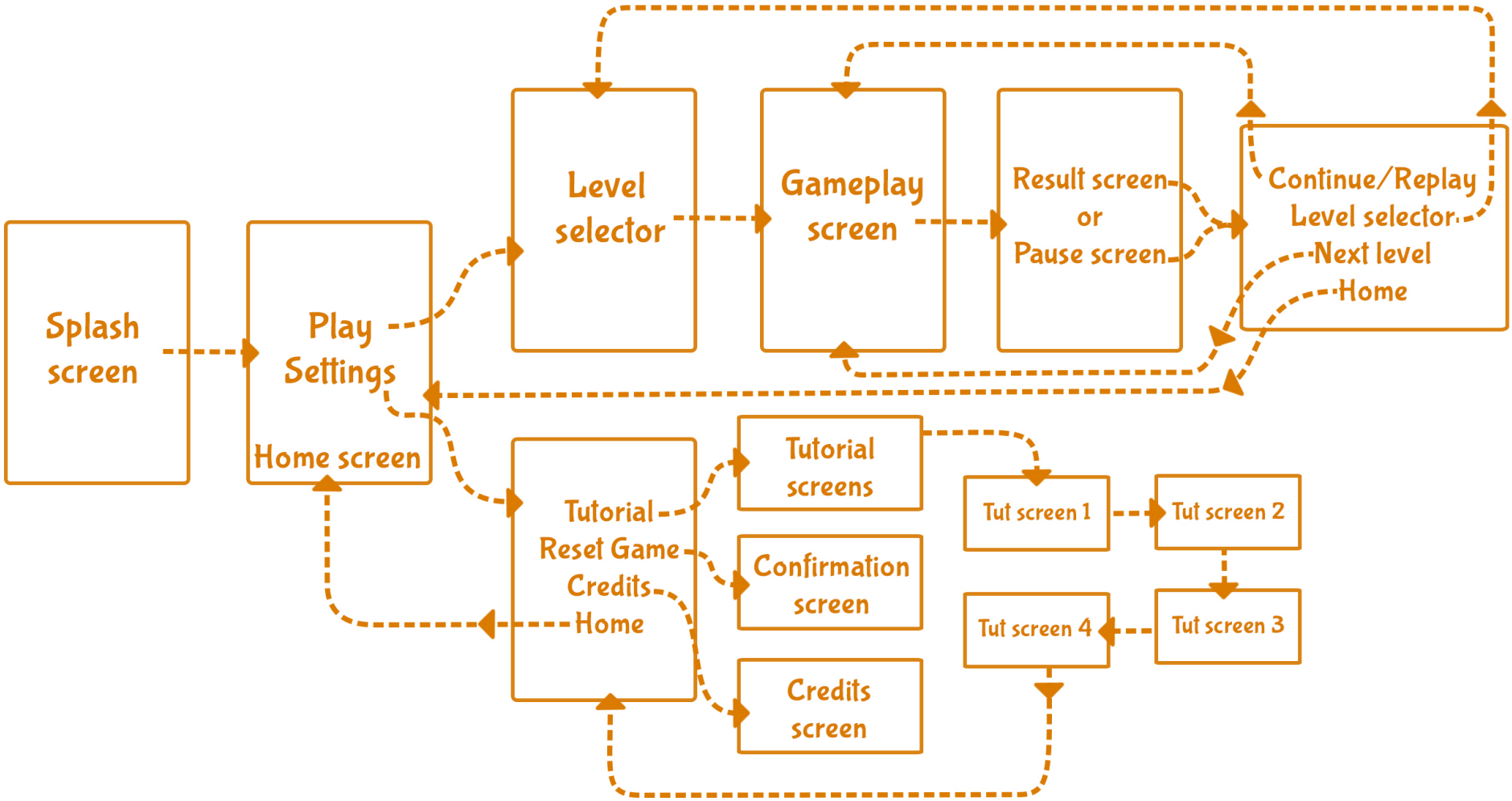

Figure 23 Screen flow

6.3 Level Design

We developed the level design together with Tobias Lotz, who was Bubble Ride's level designer. We spent time looking over all of the levels that moved up vertically. This groundwork allowed us to have a better idea on what layout worked best for our levels. The image in figure 24 shows the whole level beyond the iPad screen frame. This is an initial level mockup, which was bound to develop over time as we moved further into development. When we add more themes and setting in future updates we would have more options to change what we want to accomplish with each design. Currently each progressive level offers new challenges to the player. The layout shown in the image is a base from which we developed our current set of 30 levels. For future updates regarding level design, we concluded that we should not be limited with this layout since our mechanics offer us a vast variety of levels that we can make. With the help of only a few minor tweaks, we wouldbe able to have the same core gameplay and mechanics but with a vastly different feel.

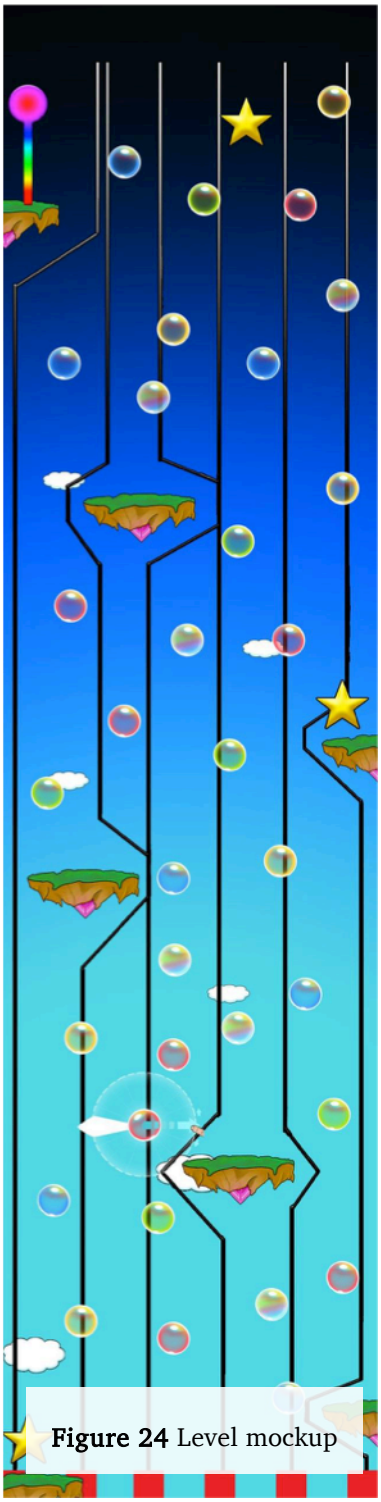

Figure 24 Level mockup

6.3.1 Level Progression

Apart from basic controls and interaction, we were very much concerned about establishing an appropriate difficulty curve. Difficulty curves introduce a player to different challenges faced during the gameplay in each level. If designers are able to distribute these challenges thoughtfully and carefully, the

game progression then makes sense. The first few levels or minutes of a game are not to challenge the player, but instead to introduce the player to the basic controls and environment. Once a player gets familiar with these, the game can then progress towards more difficult situations (Despain, 2008). Game visuals also play a part in this progression: it is often the case that as a player progresses, the characters, environments, and VFX in general become more intense or active. In the case of Bubble Ride, we introduced challenges by bringing in new complex obstacles that visually change the foreground of the game. Our plan of including different environments in future updates can also provide a challenge for the player: new environments mean obstacles and a more complex difficulty curve. Currently there are 30 levels in the game. Here is the breakdown of the first 10 levels of Bubble Ride, demonstrating how the levels were divided to introduce new elements or obstacles.

Level No.	**Number of Bubbles**	**Level time**	**Mechanics/elements introduced**
1	1 (Blue)	60-120 Sec	Jumping
2	2 (Blue, Red)	60-120 Sec	Combos
3	2 (Blue, Red)	60-120 Sec	Pickups
4	2 (Blue, Red)	60-120 Sec	Long jumps
5	2 (Blue, Red)	60-120 Sec	Special Bubbles
6	3 (Blue, Red, Green)	60-120 Sec	Spikes
7	3 (Blue, Red, Green)	60-120 Sec	Moving platforms
8	3 (Blue, Red, Green)	60-120 Sec	Fans
9	4 (Blue, Red, Green, Yellow)	60-120 Sec	Pipes
10	4 (Blue, Red, Green, Yellow)	60-120 Sec	Sticky objects

Table 2 Levels from 1 to 10.

6.3.2 Score system and equations

The concept of the scoring system has changed a lot during past decades. Early video games mostly had single-digit scores (such as Pong or Computer Space), but quickly jumped to the four-digit scores of games such as Space Invaders (Rogers, 2014). The scoring system in Bubble Ride is based on how much time remains once a player has cleared the level, and remaining time is counted as the score. Added to the score are how many color combos the player has made during that level. Tobias Lotz (colleague designer) devised the scoring system. We wanted to make a simple scoring system but didn't want it to be linear, so apart from the reward score that is offered by the game system, it is skill-based as well. The more color combos a player makes, the more it will reflect on overall scoring. It is based on the combination of the following actions and formulas mentioned below (see Tables 3 and 4):

Action Initial		**Action Name**
L	=	Level
T	=	Time
PT	=	Player time
W	=	World
WS	=	World score
CS	=	Combo score
PS	=	Player speed
CT	=	Combo timer
PP	=	Player pickup
S	=	Score
CC	=	Combo counter

Table 3 Actions used in scoring system.

Action Initial		Formula
S	=	PP+WS+ (CS*CT)
WS	=	(L+100)+(L+T)+(T+W/3)
PS	=	(T/PT)*100
CS	=	(100*CC)*CT)
PP	=	1000
CT	=	3 max -1 every 2 seconds

Table 4 Scoring system formulas

Jumping into a bubble will start off at 100 points, but doubles each consecutive time that a player jumps into the same colored bubble (for example: 100, 200, 400, 800, and so on). For every third jump into the same color bubble the player will gain a combo. The combo starts at 1000 points, and goes up by a factor of 10 each time a combo is made. The 2 times following an incrementally increased combo, a decaying amount of bonus is used (70% and 30%, respectively). A score flow looks like this:

100
200
400 + 1000
800 + 700
1600 + 300
3200 + 10000
6400 + 7000
12800 + 3000
25600 + 100000
51200 + 70000
102400+ 30000

This should allow the bonus from the combo to still be relevant and not to drop off in comparison to the score received from the bubbles. However, there is a decay system in place that will stop a player waiting on a platform until they can jump to a same-colored bubble: each combo must be made inside a 30-second duration, otherwise the combo will be lost as well as the bubble

multiplier. The player should also have visual feedback on how well they are doing.

6.3.3 Level Elements

The overall game design provides a space for levels to take place, as well as elements to take place within the level. In Bubble Ride, Bubbles are primary elements to interact in the game. Though there are different types/color of bubbles, the core mechanics of the bubbles is essentially the same throughout the game. Level elements are listed as follows:

Bubbles: Red/Blue/Green/Yellow

Blank Bubble: A bubble without color that allows player to jump in safe house in some situation in order to keep continuing the color combo.

Random Platforms: A random platform made of rocks that allow player to stay for a while and plan their next move.

Rewards and obstacles

Rewards and obstacles are part of level elements in this game. Difficulty of an obstacle or incentive of a reward increases as you progress in the each level.

Do people spend time on playing video games just to get good scores? According to Jesse Schell, there is more to it than just the score number: it's the rewards that tell players they are doing great in the game (Schell, 2008). Schell explains different types of rewards in games. These rewards go as fallows:

A Gateway: These are game structures that reward success by moving the player to new parts of the game. At the end of each level, player earns access to new level or wins a key to the exit.

Spectacle: Players like to enjoy eye-candy and interesting things. Often game show animations and play music as a simple reward. However, this kind of reward seldom satisfies the player.

Expression: Players like to express themselves within a game with different customizations such as clothes, decoration, etc. Even though this might have nothing to with the game goal, it can nevertheless satisfy the player.

Powers: Every player wants to be more powerful in a game. These powers can come in different forms: getting a special weapon, shield etc. This rewards a way to reach the game goal quickly.

Resources: This type of reward includes food, energy, hit points, or objects like bullets that player can use in the game.

Completion: This is ultimate reward type in many games. Player feels special and very much satisfied after completion of each level or a whole game itself. (Schell, 2008, p. 190)

For Bubble Ride, the main reward types are 'gateway', 'powers', and 'completion' rewards. Both gateway and completion rewards occur when the player completes the level in order to unlock the next level. To end the level in Bubble Ride, this happens after collecting the three nuts. The exit is then unlocked, allowing the player to exit the level. Listed below are the obstacles that are currently in the game:

Fan: Fans provide a force that is applied to the bubbles. This works the same way as the outgoing pipe, pushing the bubbles away from an origin point. It pushes the bubble on an X-axis. This is not an obstacle all the time, since the wind can be in a player's favor in some situations.

Spikes: Spikes cause the bubbles to break. In order to avoid them, the player must jump from the bubble before reaching the spikes.

Suction and blower pipes: The bubbles will be sucked into a pipe at a 60º angle. When the bubbles are sucked in, they are blown out of the exit pipe at the same angle they came in. All pipes work in tandem. If the player passes by a pipe, it will either push them away or vacuum them to a higher or lower location in the current level.

Sticky Object: A random object or platform in the level, which has a tendency to grab onto the bubbles. When a bubble comes in contact with a sticky object, the bubbles will stay attached to the object and pop after 3 seconds.

Moving platforms: These are platforms that are mobile. This provides the player a new challenge in aiming for a moving target. Other objects such as spikes can also be attached to a moving platform.

There are rewards and obstacles that we have planned for future updates. An old Hollywood screenwriting saying goes as follows: the main ingredients for a story are a character with a goal and an obstacle that keeps the character from reaching that goal (Schell, 2008, p. 270). When a player tries to overcome the obstacles in a game, interesting events take place that make the game more challenging, and therefore potentially more fun. We tried to come up with a set of obstacles that could go against the bubbles' physical nature such as their sensitivity, weight, and surface. Below is the list of obstacles that are currently in the game.

Rainbow Bubble: Rainbow bubble is a multicolor bubble, which increases the probability of making a color combo by jumping from any color.

Super Bubble: If you jumping to super bubble from any color, it will give the player 1000 Gold (equal to 10x combo).

Freeze: A snowflake can occur randomly in any bubble. Catching it causes all of the bubbles on-screen to freeze temporarily.

Knife: Once acquired from the bubble it is in, it gives the player the ability to break the next bubble they jump to.

Color bucket: Catching a color bucket of any color will turn the next bubble into the same color, increasing the probability of making a color combo. Color buckets only appear in colored bubbles.

Arrows: Different types of arrows provide different jump styles. Curvy jump, straight jump, long jump, zigzag jump are included, and can be used for various situations.

Bubble Eater: This is a random animal (NPC) that eats the bubbles, which can affect the player's performance.

6.3.4 Level Themes Suggestions

There are some keywords we considered for possible theme updates, a few examples being steampunk, sci-fi, pirates, mountains, 8-bit, desert, winter, and fire/lava. Each theme would include a number of new elements and objects.

6.4 Outsourcing

In the team we had at that time, we were lacking an in-house animator and sound designer. We hired a freelance animator and sound designer for this project. Apart from what I was doing (i.e. game design, game art, GUI), I was responsible for the correspondence with the animator and provide her with the necessary materials such as main character design and bubbles design so that she could then animate the assets. Being in the lead role on game art side, I was responsible to provide her with the feedback on animations she was doing. My previous art experience helped me to oversee those animations to make sure the rules of interaction corresponded to the concept of the game.
Concerning the sound design, it was not a one-person decision to listen to the sound pieces and background music. The team worked on this together; everyone provided their comments and came to a mutual decision.

6.5 Game Testing

For me, the most interesting part in the game design process is getting to know the initial results of your efforts from a selected audience. Most of our testing was with children, since this was our target audience. Allison Druin, a professor in University of Maryland Institute for Advanced Computer Studies, describes in one of her paper that children are incredibly honest in their assessment of technology, since they have little patience toward what they don't like, and know readily what they do like (Druin, 2002, p. 14). We went to a local school and conducted a game testing session with children 10-12 years of age. I unfortunately did not document the results closely, since at the time I had

not yet decided to write my thesis on Bubble Ride. After deciding to create my thesis about the project, I conducted some game testing sessions again with children. Most were of the same age group as before, and a few were slightly younger. I was not able to test this in the school again, so instead I asked some of my friends and acquaintances if I could use their children as test subjects. I tested the game more thoroughly this time and observed the testing sessions more attentively.

6.5.1 Observations during Play testing

- Tutorial should have been basic interaction in the beginning, not for how to make color combos until they are introduced.
- One of the testers could not get how to make longer jumps.
- Most of the testers were not taking color combos into consideration.
- Most of the testers wanted to retry levels if they could not complete it.
- One of the testers using both hands to play the game.
- Some testers felt frustrated when they could not reach to a bubble.
- Average playtime was 15 minutes.

6.5.2 Feedback from testers

I was happy with the results after play testing. Surprisingly, most of the kids had fun while playing the game, an outcome that I was not expecting. Most of the testers like the pleasant visuals of the game and found the main character cute and appealing. Some of the things we were expecting from testers as feedback were suggestions like different locations (background themes), character customization, etc. I noticed that boys generally wanted to have more action in the game, such as adding combat (boss fight). In contrast, girls wanted to have more decoration-related features like flowers in the background, character costumes, etc.

Tester	Gender	Age	Wish to Add	Wish to Remove/tweak
Tester A	Boy	10	***Boss fight***	
Tester B	Girl	10	***More flowers in background***	
Tester C	Girl	12	***Different backgrounds/scenes***	
Tester D	Boy	12	***Multiplayer***	
Tester E	Girl	12		***Hard to die***
Tester F	Girl	10	***Character customization***	
Tester G	Girl	10	***Special bubble to give character special powers***	

Table 5 Testers info.

6.5.3 Using testing results for further planning

The purpose of testing to observe flaws and fix/add the appropriate features based on the results. I did not observe any serious problems during either test session, but there were some minor tweaks and feature requests that might be beneficial to implement in future versions (such as different background art, multiplayer mode, and more special bubbles). We did not implement any changes after the first play test session, but we did mark the features that testers demanded. But not for implementing right away all the wishes what players demanded. Only the one we already had in mind to change and player also provided the same feedback and we saved the feedback for future updates.

6.6 Launch

We submitted the game to the App Store on May 21st, 2013. Version 1.0 was launched on June 21st, 2013. The day the game was launched was my last day of work. Six months of effort felt almost wasteful, since with a basic version of 30 levels, I could not expect spectacular results. This is partly due to the fact that it is only for iPad (though in upcoming updates we have planned to launch

it for other platforms). I was looking for reviews, but because of a lack of advertising and publicity there were not that many downloads. Although I forwarded the game link to my friends and asked for feedback, it was mostly positive and I was satisfied for a first game as designer.

6.7 Learning outcome

Since our game was designed around an idea, we didn't want to include a story just for the sake of a story. However, it actually helped us to have a short story, since we could then come up a stronger main character and current background theme. If we had have come up with the story in early stage, we may have ended up with a different design or different gameplay mechanics. Later on in the production phase when we tested the game with kids, we realized that it was great to have a story that children liked a lot.

Mechanics-wise, there were some minor things that could have been improved. I noticed later while testing with the children that it wasn't clear to the player that they could have controlled the jumping strength of the character. It sometimes created confusion for the player. Perhaps it could have been removed or presented in a different way.

In retrospect I see that we should have considered the elements of our future updates in the current version, at least in the free-to-play model, since the nature of games monetization has changed dramatically in the last four years. According to a game monetization strategy report 2013-14, the free-to-play model has become the single biggest disruptor within the video game industry (Laura, 2014). If a company does not wanted to pursue a monetization model at this point, they should invest in proper advertising.

There is no process in which you end up learning nothing. It doesn't matter if what you are testing ends up with the desired results or not. The end result always helps one to move forward more wisely. We were lucky in that we found the desired feedback after prototyping. Although I did not have the results that I was expecting, I have learnt a lot. It was tricky for me in the beginning to partake in technical decisions such as choosing the technology, but after

spending time reading about game engines and the basics of 2D editors, I became confident enough to discus the tools we were using and how to take it further after prototyping. We had to keep in mind the company's budget and how we could not use expensive tools like Unity.

In the early process of prototyping, I wanted to try the paper prototyping that I had learned in a random course at Media Lab. It was quite effective for apps, but I was not sure how it would go with the game. It depends on the game idea as well. For example, Arash John Sammander was a game design student in Media Lab. He made a paper prototype of a card game before making a digital prototype (Sammander, 2014). The paper prototype was only helpful for the gameplay of Bubble Ride in that it made us think how we would generate bubbles and what the locations for the bubble generators should be. I would still suggest to anyone to prototype with paper first, since it is a cheap and easy way to learn about the interaction, even if there isn't much that comes of the learning experience.

Pre-production from an artist's perspective is mostly finding out the suitable art style for the game (Piekkola, 2015) pre-production for a game project for a designer is a way heavier job. I learned a lot about the pre-production phase from choosing the suitable game engine to prototyping to user testing.

It became hectic at one point when I had to simultaneously take care of the art and design for the game. However, it was a very good practice. After switching my roles back and forth, every time I switched back to the role of artist I could see the flaws usually unable to be pinpointed while working. Switching roles worked in refreshing ways in order to see the visual assets with a fresh mental perspective. Apart from this, I have gained technical knowledge regarding game engines, level editors, and how to cope with technical constraints. It took us some time to figure out how the parallax scrolling would work for the background. Initially it was done as one flat background image, which proved problematic. Luckily my workflow for developing art assets is such that I keep everything in layers and in organized order, so it was not big problem to reproduce the background images in 7 separate layers.

Coming up with the balanced level design and scoring system was an iterative process for which we had to run multiple in-house testing sessions. This passed the basic concepts of scoring and progressing in the games in general. As an artist, one might not know the importance of a single prop or a small asset that can play a significant role in the gameplay experience. It is easily possible for game artists to take everything into same context while developing art assets, whereas even a small asset could affect your progression and score. Designing the tutorial screen may be the same for the UI designer as any other UI element, but while producing new mechanics or a new game element in game play, it is very important to organize the order for tutorial screens very carefully. In our current version, there is an order of tutorial screens which has been left unnoticed or hard to remember for the players—when the actual event/element/mechanic takes place in the game, some players did not even remember that it had been shown earlier in the tutorial. The current tutorial does not overtly prompt the player to make color combos. A solution could be to have a tutorial level that aims to teach players about making color combos, not allowing the player to complete the level until the player makes color combos a certain number of times

What I gained out of the production phase predominantly had to do with the results from test users and I myself enjoyed this process a lot. I have learned that by testing a game, you get the live feedback and a chance to observe player's emotional responses towards game events. This improves your game's quality whether its' art related, gameplay related or technical. By observing players' reactions, it helped me to come up with the better user interface to make smoother user experience. It is hard to point out a certain things, because every game is different. However, players can provide you with feedback accordingly. It would have been great if we had had the time to implement the strongest feedback from test users (such as adding special bubbles or making the levels more challenging). From now on I will stress user testing during the pre-production phase, as well as making significant changes in the game design to reflect the results of this testing.

7. Conclusion

This project is reflection of my first game as designer. Bubble Ride was a worthy 5-month experience to kick off my game design career. In the beginning I had the mindset that it would be an easy job for me, since I had been working as artist (and more specifically a game artist), but there is lot more to know beyond the visual and color ABCs. Visual assets can be easy to decide on whether or not they are going to work, whereas in game design you need to know how others feel about the design and gameplay. Having an art background can certainly be helpful in your game design career.

There is a room of improvement in the mechanics of the game, which I realised after observing the players during game testing sessions. However, we did not revise the mechanics for the basic version. Along with other game elements, game monetization and new features, we left mechanics improvements for future updates but unfortunately we never had any update after the game launch.

Workflow varies in between role of game designer and game artist in different stages of the game production. In the phase of prototyping, game art is not heavily involved in the process apart from what the visual look and feel needs to be like in the game. However, the process of game design begins way earlier than the game art. At this early stage we tried to only focus on game design, although I was gathering my rough thoughts related to its art (which, given my background, was only natural).

Working for many years as a game artist, I did not specialize in any particular category. Instead I am a general game artist who could work on

general game art assets. Now working as game designer, I feel the same way: I do not have any specific game genre in my mind. However, I'm mostly interested in designing new types of interaction within the games and providing players a unique experience.

I often play games that have a good-looking and unique art style, since it is inviting. The same goes for games that have new and unique gameplay mechanics. I'm sure other people out there share my opinion. If a game has both unique visuals and gameplay together, it's a must-play for me. As a player game art serves my visual aesthetics, whereas the game design involves more than one sense. Game art complements the gameplay and enhances the experience along with game audio. For me, game design is about designing a new experience for the players and game art is about enhancing that experience. As a professional, both game art and game design and the purposes they serve are important to me.

Having a good knowledge of popular culture helped me during game design process although there is no direct mainstream reference in the game. By having knowledge of mainstream media, gimmicks helps you that draw audience's attention. Most of the people are very well connected with mainstream, by seeing the reference to mainstream, players feels familiar and happy and seems they own it. As currently I'm working with Angry Birds Seasons as level designer, and we often includes references from the real events, movies and games. I do not have better example than this in my career as a designer.

Being a designer, one is concerned about the art and animation one will be using in their design. We were relatively a small team and I was also taking care of the art, so I was anxious about my design. Since we did not have an animator in our team, we had to outsource the animations. Working as an artist (and lead artist) throughout my professional career I was able to provide a constructive feedback and oversee those animations, making sure those rules of interaction matched the concept of our game.

My expectations from this game were not very high since the company was closed on the very day of game launch. However, I was excited to see the results and players feedback since we received positive comments during game

testing sessions. This game could have done better if it had been given a fair amount of advertisement. From a business angle Bubble Ride was essentially a failure, which in my opinion was not due to the game's quality. And besides, there were not any significant number of downloads that could make a difference. I don't have the actual numbers now I look back, I can see the bigger picture that I was not be able to see that time.

I have tried to investigate the pre-production and production phase as deeply as possible to find out what actually worked and what went wrong and how it could have been better within the context of this particular project. We spent about 5 months with 6-person team, which is a decent timeframe for a casual mobile game. The technical constraints I faced during this process generally seem like positive points, as I have gained some knowledge. I also have a better knowledge of how to eliminate negative setbacks in the future. Overall, I feel better to have a full fledge game under my name in my portfolio and I can proudly call myself a game designer.

Thank you!

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9. Appendix

Artist to designer Questionnaire

https://docs.google.com/document/d/1lNW2LYHtP3HLe4xjCOoB1AYKxq54lPU3iw5ngcnoYzg/edit?usp=sharing

User testing with kids (form)

https://drive.google.com/file/d/0B2pXgYnlCfU8MWJORGo4eUdnVFk/view?usp=sharing